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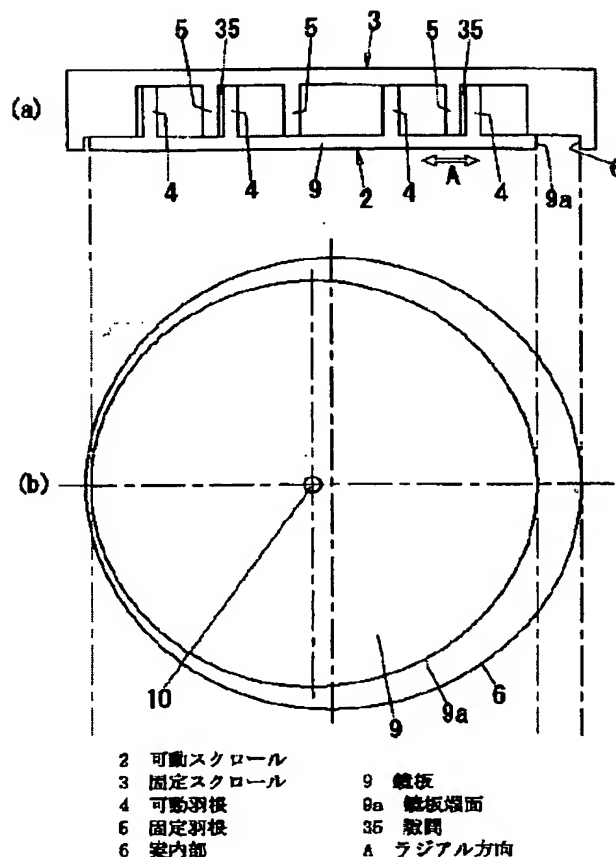
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TITLE : SCROLL COMPRESSOR



ABSTRACT : PROBLEM TO BE SOLVED: To easily prevent the mutual contact of the side surfaces of blades of a movable scroll and a fixed scroll without requiring high assembling precision or working precision of each part, and to attain reduction in noise of a scroll compressor and the improvement in pump efficiency.

SOLUTION: This scroll compressor comprises the movable scroll 2 and the fixed scroll 3 arranged so that the side surfaces of blades 4 and 5 are mutually opposed; a drive transmitting mechanism for converting the power of a motor to the revolving motion of the movable scroll 2 around a motor shaft; and a rotation preventing mechanism for preventing the rotation of the movable scroll 2 in the revolution of the movable scroll 2. A guide part 6 for guiding the end plate end surface 9a of the movable scroll 2 to prevent the contact of the movable blade 4 with the fixed blade 5 in the revolution of the movable scroll 2 is provided on the fixed scroll 3.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] About the scrolling compressor used as a pump, this invention makes small the clearance between the wings of movable scrolling and fixed scrolling in detail, raises pump efficiency, and relates to the scrolling compressor suitable for reducing the noise by contact of a wing.

[0002]

[Description of the Prior Art] As a conventional scrolling compressor, while arranging movable scrolling which has a spiral movable vane in the whole surface side of an end plate, and fixed scrolling which has the above-mentioned movable vane and the spiral stationary vane which counters so that the side faces of a wing may counter The drive transfer device for changing the power of a motor into the orbital motion of movable scrolling centering on a shaft, The rotation prevention device for preventing rotation of movable scrolling at the time of revolution of movable scrolling is established. The closed space formed between a movable vane and a stationary vane by making movable scrolling revolve around the sun, without being accompanied by rotation is moved to a core side from a vortical outside, and after making it reduce serially and compressing the volume, the thing it was made to make the compressed air breathe out from a delivery is known.

[0003] In this kind of scrolling compressor, although it is made to make the above-mentioned clearance small since the effectiveness of a pump will fall if the clearance between the wings of movable scrolling and fixed scrolling becomes large, it is very difficult for a high assembly precision to be needed in case movable scrolling and fixed scrolling are attached, for example to a motor in order, and to make a clearance small.

[0004] Moreover, conventionally, the guidance device which restrains revolution of movable scrolling is prepared in JP,2000-46046,A and JP,1-167781,A, and what was made to perform orbital motion of movable scrolling by the criteria of a guidance device is indicated. However, if it is when orbital motion of movable scrolling is performed by the criteria of a guidance device in this way, in order to make small the error of the anchoring criteria of fixed scrolling, and the revolution criteria of movable scrolling, the high process tolerance of each part article is needed.

[0005] Moreover, as other conventional examples, like JP,11-257253,A, although what contacted the side faces of a wing, and the clearance was lost [what] and raised the effectiveness of a pump by this is known by giving the compliance function by the flat spring to the radial direction of a wing In this conventional example, contact of wings is not the contact which the time of the inside (revolution core side) of a wing contacting and the outside contact and followed in orbital motion. Therefore, the collision sound of wings caused noise of a scrolling compressor.

[0006] Furthermore, although what prevented that formed the guide 40 for inclination prevention which counters end plate end-face 9a of the movable scrolling 2 in the fixed scrolling 3, and the movable scrolling 2 inclined at the time of revolution is known by JP,4-91292,U as other conventional examples as shown in drawing 12 If it is in this guide 40 for inclination prevention, it does not pass to the thing for preventing inclining the movable

scrolling 2 in the thrust direction B, but differs from what prevents contact to a movable vane 4 and a stationary vane (not shown).

[0007]

[Problem(s) to be Solved by the Invention] Without needing a high assembly precision and the process tolerance of each part article, the place which invents this invention in view of the trouble of the above-mentioned conventional example, and is made into the purpose can prevent contact of the wings of movable scrolling and fixed scrolling easily, and is to offer the scrolling compressor which can aim at reduction of the noise, and improvement in pump efficiency.

[0008]

[Means for Solving the Problem] If it is in this invention in order to solve the above-mentioned technical problem While arranging the movable scrolling 2 which has the spiral movable vane 4 in the whole surface side of an end plate 9, and the fixed scrolling 3 which has the above-mentioned movable vane 4 and the spiral stationary vane 5 which counters so that the side faces of wings 4 and 5 may counter The drive transfer device 8 for changing the power of a motor 11 into the orbital motion of the movable scrolling 2 centering on a shaft 12, The rotation prevention device 7 for preventing rotation of the movable scrolling 2 at the time of revolution of the movable scrolling 2 is established. In the scrolling compressor it was made to make the compressed air breathe out from a delivery 16 after having moved the closed space 15 formed between a movable vane 4 and a stationary vane 5 by making the movable scrolling 2 revolve around the sun, without being accompanied by rotation to the core side from the vortical outside, making the volume reduce serially and compressing With being characterized by establishing the interior 6 of a proposal for guiding end plate end-face 9a of the movable scrolling 2 in the fixed scrolling 3 so that a movable vane 4 and a stationary vane 5 may not contact mutually at the time of revolution of the movable scrolling 2, and constituting in this way It can prevent, when end plate end-face 9a ****s that the side faces of the wings 4 and 5 of the movable scrolling 2 and the fixed scrolling 3 contact at the time of revolution of the movable scrolling 2 to the interior 6 of a proposal. While being able to plan noise abatement by contact of the side faces of wings 4 and 5 By having established the interior 6 of a proposal in the fixed scrolling 3, the stationary vane 5 and the interior 6 of a proposal of the fixed scrolling 3 can be collectively manufactured now, it becomes easy to take out the precision of a wing 4 and the clearance 35 between five, and the effectiveness of a pump can be raised.

[0009] Moreover, while making circular the periphery configuration of end plate end-face 9a of the above-mentioned movable scrolling 2 It is desirable that it is characterized by the thing which make a radius r_a the value which applied the end plate radius r_b of the movable scrolling 2 and the revolution radius r_c of the movable scrolling 2 for the configuration inside [6] the proposal of the fixed scrolling 3 and which was made circular. In this case, end plate end-face 9a of the movable scrolling 2 can be made to **** continuously and certainly to the interior 6 of a proposal of the fixed scrolling 3 at the time of revolution of the movable scrolling 2 now.

[0010] Moreover, the slide contact side end plate end-face 9a of the above-mentioned movable scrolling 2, and inside [of the fixed scrolling 3 / 6] a proposal It is desirable that it is characterized by for abbreviation etc. having been by carrying out to the field which intersects perpendicularly with the plate surface f of the movable scrolling 2 and the fixed scrolling 3 and f' , respectively, and making it incline at an include angle. In this case, in case

end plate end-face 9a ****s to the interior 6 of a proposal by migration of radial direction A accompanying revolution of the movable scrolling 2 The pressure when end plate end-face 9a ****ing to the interior 6 of a proposal is distributed by the force of radial direction A, and the force of the thrust direction B, and wear of the slide contact side of the end plate end-face 9a and the interior 6 of a proposal which this moves to radial direction A can be reduced.

[0011] Moreover, it consists of an ingredient with which the ingredient which forms the end plate end-face 9a part of the above-mentioned movable scrolling 2 differs from the ingredient which forms body of end plate partial 9b other than an end plate end-face 9a part, and a movable vane 4. It is desirable that it is characterized by forming the movable scrolling 2 by unifying an end plate end-face 9a part, body of end plate partial 9b, and a movable vane 4 with an ingredient. ***** -- In this case, as an ingredient of the interior 6 of a proposal, and the slide contact side of an end plate end-face 9a part, if abrasion resistance and a low friction material are used, reduction can be aimed at for the abrasion loss of a slide contact side, for example, if a resin ingredient is used, it will become possible to raise the adhesion of a slide contact side.

[0012] At least to moreover, one side of end plate end-face 9a of the above-mentioned movable scrolling 2, the interior 6 of a proposal of the fixed scrolling 3, and a slide contact side It is desirable that it is characterized by carrying out insert molding of the slide member 30 which consists of a different ingredient from the ingredient which forms the movable scrolling 2 and the fixed scrolling 3. In this case, abrasion loss can be reduced now by carrying out insert molding of the slide member 30 which consists of abrasion resistance and a low friction material to the end plate end-face 9a part of the movable scrolling 2.

[0013] Moreover, the interior 6 of a proposal established in the above-mentioned fixed scrolling 3 Radial receptacle side 6a which receives the force of radial direction A accompanying revolution of the movable scrolling 2, It is desirable that it is characterized by consisting of thrust pad side 6b which receives the force of the thrust direction B of the movable scrolling 2. In this case, since each location regulation of radial direction A in the movable scrolling 2 and the thrust direction B is prepared in one in the same components (fixed scrolling 3), it becomes easy to carry out management of a wing 4 and the clearance 35 between five.

[0014] Moreover, the drive transfer device 8 for changing the power of the above-mentioned motor 11 into the orbital motion of the movable scrolling 2 centering on a shaft 12 It is desirable that it is characterized by having an engagement means 20 to make the driving shaft 10 of the movable scrolling 2 engage with an eccentric cam 13 so that the movable scrolling 2 may become movable only to radial direction A at the time of revolution of the movable scrolling 2. In this case, since the movable scrolling 2 is engaging with radial direction A movable to a shaft 12, that end plate end-face 9a can be made to **** certainly to the interior 6 of a proposal of the fixed scrolling 3 at the time of revolution of the movable scrolling 2.

[0015] As for the above-mentioned engagement means 20, it is desirable that it is characterized by making the movable scrolling 2 engage with a shaft 12 so that end plate end-face 9a of the movable scrolling 2 may **** to the interior 6 of the proposal of the fixed scrolling 3 according to the centrifugal force at the time of revolution of the movable scrolling 2. In moreover, this case According to the centrifugal force at the time of revolution of the movable scrolling 2, end plate end-face 9a of the movable scrolling 2 and the interior 6 of a proposal of the fixed scrolling 3 will **** continuously, and noise abatement can be planned.

[0016] Moreover, it can be desirable that it is characterized by equipping the above-mentioned engagement means 20 with the elastic body 21 for pressing the movable scrolling 2 to radial direction A, and holding end plate end-face 9a of the movable scrolling 2 and the interior 6 of a proposal of the fixed scrolling 3 in the state of a slide contact at the time of revolution of the movable scrolling 2, it can be the easy structure of forming an elastic body 21 in this case, and can reduce a collision sound now further.

[0017]

[Embodiment of the Invention] Hereafter, this invention is explained based on the operation gestalt shown in an accompanying drawing.

[0018] As arrange an inlet (not shown) to a periphery side, it arranges a delivery 16 to a core, and the scrolling compressor 1 of this operation gestalt is made to carry out the regurgitation of the air inhaled from the inlet from a delivery 16 and specifically shows it to drawing 2 and drawing 3. The housing 14 which carried out the shape of a closed-end cylindrical shape is attached in the outline of a motor 11. The eccentric cam 13 which has the engagement hole 17 is attached in the location which carried out specified quantity eccentricity from the core of a shaft 12 at the shaft 12, and the driving shaft 10 projected from the inferior surface of tongue of the movable scrolling 2 to the engagement hole 17 of this eccentric cam 13 is being engaged. 10a in drawing 2 is at the time, and is attached in the periphery of a driving shaft 10. From the core of the end plate 9 of the movable scrolling 2, eccentricity of this driving shaft 10 is carried out, it is established, it is connecting this driving shaft 10 and shaft 12 through an eccentric cam 13, and the drive transfer device 8 for changing the power of a motor 11 into the orbital motion of the movable scrolling 2 centering on a shaft 12 is constituted. That is, the transfer device 8 consists of an eccentric cam 13 attached in a shaft 12, and a driving shaft 10 prepared in the movable scrolling 2, as shown in drawing 2.

[0019] The spiral movable vane 4 is formed in the top face of the end plate 9 of the movable scrolling 2, the above-mentioned movable vane 4 and the spiral stationary vane 5 which counters are formed in the fixed scrolling 3, the side faces of wings 4 and 5 counter and they are arranged so that a closed space 15 (drawing 11) may be formed between a movable vane 4 and a stationary vane 5. In addition, the fixed scrolling 3 is in the condition which applied the periphery inferior surface of tongue to the periphery top face of housing 14, and has fixed in housing 14 with the fixed screw (not shown). This housing 14 has fixed to the outline of a motor 11 with another fixed screw 18.

[0020] Between the movable scrolling 2 and housing 14, Oldham ring 7a (drawing 2) is arranged as a rotation prevention device 7 for preventing rotation of the movable scrolling 2 at the time of revolution of the movable scrolling 2. The bottom engagement section 23 engaged free [the slide to the Oldham ring groove 19 established in housing 14 along with radial direction A] as Oldham ring 7a is shown in drawing 3, The bottom engagement section 25 engaged free [a slide] is formed in the Oldham ring groove 24 established in the inferior surface of tongue of the end plate 9 of the movable scrolling 2 along with radial direction A. Rotation movement of the movable scrolling 2 is prevented by this Oldham ring 7a like the after-mentioned, and only revolution actuation is possible for the movable scrolling 2.

[0021] Moreover, as shown in drawing 1, in the above-mentioned fixed scrolling 3, the interior 6 of a proposal for showing end plate end-face 9a of the movable scrolling 2 is established, and the movable vane 4 and the stationary vane 5 have at it the structure where it

does not contact mutually because the end plate end-face 9a ****s to the interior 6 of a proposal at the time of revolution of the movable scrolling 2. In drawing 4 , an example of the dimension of end plate end-face 9a of the movable scrolling 2 and the dimension inside [6] a proposal is shown here. Here, the periphery configuration of end plate end-face 9a of the movable scrolling 2 is made circular, and the value which applied the end plate radius r_b of the movable scrolling 2 and the revolution radius r_c of the movable scrolling 2 for the configuration inside [6] the proposal of the fixed scrolling 3 is made into a radius r_a ($=r_b+r_c$), and is made circular. Thus, end plate end-face 9a of the movable scrolling 2 can be made to **** continuously to the interior 6 of a proposal of the fixed scrolling 3 by making the radius r_a inside [6] a proposal into the value which applied the end plate radius r_b of the movable scrolling 2, and the revolution radius r_c of the movable scrolling 2 now. It is desirable to form at least one side of the interior 6 of a proposal and the slide contact side of end plate end-face 9a using a wear-resistant ingredient or a low friction material in here. Moreover, a slide contact side may be coated with spreading of lubricant, such as grease and an oil, or low friction material. In addition, although the condition that the side faces of wings 4 and 5 contacted is illustrated in drawing 4 , between a wing 4 and 5, the clearance 35 is formed like drawing 1 (a) in practice, and this is the same also in drawing 5 which shows each of other below-mentioned operation gestalt - drawing 8 .

[0022] Next, if actuation of the scrolling compressor 1 of the above-mentioned configuration is explained, when a shaft 12 rotates, an eccentric cam 13 will perform orbital motion to a shaft 12. Although the movable scrolling 2 also performs orbital motion to a shaft 12 according to movement of an eccentric cam 13 at this time, since the movable scrolling 2 is having that rotation controlled by Oldham ring 7a at this time, only orbital motion is performed to the fixed scrolling 3. The air attracted from the inlet is compressed continuously in a closed space 15, the closed space 15 formed between a movable vane 4 and a stationary vane 5 can be moved to a core side from a vortical outside, the volume can be made to be able to reduce serially, it can compress, and the compressed air can be made to breathe out from a delivery 16 (drawing 2), as by repeating this orbital motion shows to drawing 11 .

[0023] By carrying out a deer and making end plate end-face 9a of the movable scrolling 2 **** to the interior 6 of a proposal established in the fixed scrolling 3, since he is trying not to contact the side faces of the wings 4 and 5 of the movable scrolling 2 and the fixed scrolling 3, noise abatement by contact of the side faces of wings 4 and 5 can be planned, and the noise of a pump can be reduced. As furthermore shown in drawing 4 , by making the radius r_a inside [6] a proposal into the value which applied the end plate radius r_b of the movable scrolling 2, and the revolution radius r_c of the movable scrolling 2, end plate end-face 9a of the movable scrolling 2 can be made to **** continuously to the interior 6 of a proposal of the fixed scrolling 3 now, and the collision sound of the movable scrolling 2 and the fixed scrolling 3 can be reduced further. Moreover, since the interior 6 of a proposal is established in the fixed scrolling 3, in case the movable scrolling 2 and the fixed scrolling 3 are attached to a motor 11 in order, a high assembly precision becomes unnecessary. That is, since the successive range of radial direction A accompanying revolution of the movable scrolling 2 is regulated by the interior 6 of a proposal of the fixed scrolling 3 even if it does not raise assembly precision, it becomes very easy to make the clearance between a wing 4 and 5 small. Moreover, the movable vane 4 of the movable scrolling 2, body of end plate partial 9b, and an end plate end-face 9a part can be manufactured collectively. From the ability of the stationary vane 5 and the interior 6 of a proposal of the fixed scrolling 3 to be manufactured furthermore collectively As a result of it being able to become easy to become easy to take out the precision's of a wing's 4 and the clearance 35 between five, and to make small a wing's 4

and the clearance's 35 between five by this and being able to raise the effectiveness of a pump further, the efficient scrolling compressor 1 can be offered now in the low noise.

[0024] Drawing 5 shows an example at the time of the slide contact side end plate end-face 9a of the above-mentioned movable scrolling 2 and inside [of the fixed scrolling 3 / 6] a proposal being in abbreviation etc. by carrying out to the plate surface f of the movable scrolling 2 and the fixed scrolling 3, and f' (or field which intersects perpendicularly with a plate surface f and f'), respectively, and making it incline by the include angle theta and theta' as an operation gestalt of further others. Other configurations are the same as that of the operation gestalt of drawing 1, and only a different point is described. In this example, end plate end-face 9a of the movable scrolling 2 is formed in the shape of a taper by theta whenever [tilt-angle / which projects toward an outside], so that it goes to a lower limit from upper limit, and the interior 6 of a proposal of the fixed scrolling 3 is in the above-mentioned end plate end-face 9a, abbreviation, etc. by carrying out, and is formed in the shape of a taper by include-angle theta' (theta**theta'). By this, in case end plate end-face 9a ****s to the interior 6 of a proposal by migration of radial direction A accompanying revolution of the movable scrolling 2 The pressure when end plate end-face 9a ****ing to the interior 6 of a proposal is distributed by the force of radial direction A, and the force of the thrust direction B, and wear of the slide contact side end plate end-face 9a which moves to radial direction A by this, and inside [which receive this / 6] a proposal can be effectively reduced now.

[0025] As an operation gestalt of further others, drawing 6 shows an example of the ingredient which forms the above-mentioned movable scrolling 2. Other configurations are the same as that of the operation gestalt of drawing 1, and only a different point is described. from ingredient 2a from which the ingredient which forms the end plate end-face 9a part of the movable scrolling 2, and the ingredient which forms body of end plate partial 9b other than an end plate end-face 9a part and a movable vane 4 differ in this example, and 2b -- becoming -- ***** -- the movable scrolling 2 is formed by unifying an end plate end-face 9a part, body of end plate partial 9b, and a movable vane 4 with an ingredient. In here, synthetic resin, such as metallic materials, such as aluminum and zinc, thermoplastics, and thermosetting resin, can be used, for example as ingredient 2a which forms body of end plate partial 9b, and a movable vane 4. It is desirable to use synthetic resin excellent in especially mass-production nature. In this case, in order to raise shaping precision to synthetic resin or to raise the dimensional accuracy by the operating environment, it is desirable to be filled up with inorganic fillers, such as a silica, a glass bead, and a glass fiber. On the other hand, the synthetic resin which the metallic material which infiltrated organic lubricant into a thing like an ingredient into which PTFE was infiltrated, for example, a metal, could be used [synthetic resin], or made lubrication assistants, such as a carbon fiber, tetrafluoroethylene resin (PTFE), and molybdenum disulfide, contain can be used after sintering bronze powder to porosity for example, in the shape of a network as ingredient 2b of the end plate end-face 9a part which ****s to the interior 6 of a proposal. Thus, if the abrasion loss of a slide contact side can be reduced, a life can be raised now and especially a resin ingredient is used by using abrasion resistance and a low friction material as ingredient 2b of the end plate end-face 9a part of the movable scrolling 2 which ****s to the interior 6 of the proposal of the fixed scrolling 3, the adhesion inside [of the fixed scrolling 3 / 6] a proposal can be raised.

[0026] As an operation gestalt of further others [drawing 7], the ingredient which forms the movable scrolling 2 and the fixed scrolling 3 at least in one side of end plate end-face 9a of the above-mentioned movable scrolling 2, the interior 6 of a proposal of the fixed scrolling 3, and a slide contact side shows the case where insert molding of the slide member 30 which

consists of a different ingredient is carried out. Other structures are the same as the operation gestalt of drawing 1 , and only a different point is described. In this example, insert molding of the slide member 30 which consists of a different ingredient from the ingredient which forms body of end plate partial 9b of the movable scrolling 2 in end plate end-face 9a of the movable scrolling 2 is carried out. The approach of carrying out injection molding of the approach of carrying out insert molding of the slide member 30 which consists of synthetic resin to the movable scrolling 2 produced beforehand as the insertion approach in injection molding, or the movable scrolling 2 to metal mold using synthetic resin, and making rotate the metal mold continuously, carrying out injection molding of the sliding ingredient to the end plate end-face 9a part of the movable scrolling 2 from other nozzles, and forming a slide member 30 can be used. By carrying out a deer and carrying out insert molding of the slide member 30 which becomes the end plate end-face 9a part of the movable scrolling 2 from abrasion resistance and a low friction material, abrasion loss can be reduced, a life can be raised, and adhesion with the ingredient which forms scrolling can be raised by using the slide member 30 which consists of a metallic material especially. In addition, insert molding of the slide member 30 which consists of a different ingredient from the ingredient which forms the fixed scrolling 3 in the interior 6 side of a proposal of the fixed scrolling 3 as other examples of drawing 7 may be carried out.

[0027] Drawing 8 shows the case where the interior 6 of a proposal established in the above-mentioned fixed scrolling 3 consists of radial receptacle side 6a which receives the force of radial direction A accompanying revolution of the movable scrolling 2, and thrust pad side 6b which receives the force of the thrust direction B of the movable scrolling 2 as an operation gestalt of further others. Other configurations are the same as that of the operation gestalt of drawing 1 , and only a different point is described. In this example, as shown in drawing 8 , the coil spring 32 made to generate the thrust force for pressing the movable scrolling 2 in the thrust direction B is formed. Between the end of a coil spring 32, and end plate 9 inferior surface of tongue of the movable scrolling 2, the sliding material 31 which consists of antifriction and a low friction material intervenes. The other end of a coil spring 32 is inserted in the hollow 50 (drawing 2) of housing 14, and is supported with the spring backing plate 51. The top face inside [6] the proposal of the fixed scrolling 3 is thrust pad side 6b which receives the force of the thrust direction B of the movable scrolling 2, the end plate end-face 9a part is pinched between this thrust pad side 6b and the sliding material 31, and the movable scrolling 2 revolves around the sun in this condition. Moreover, the vertical plane inside [6] a proposal is radial receptacle side 6a which receives the force of radial direction A accompanying revolution of the movable scrolling 2, is fixed within the limits and can regulate now migration to radial direction A accompanying revolution of the movable scrolling 2.

[0028] By carrying out a deer and establishing the interior 6 of a proposal radial receptacle side 6a and thrust pad side 6b were [inside] united in the fixed scrolling 3 Each location regulation of radial direction A in the movable scrolling 2 and the thrust direction B comes to be prepared in one in the same components (fixed scrolling 3). As a wing 4 and the clearance 35 (drawing 1 (a)) between five become small, it is easy to carry out management and it becomes, as a result it leads to the improvement in effectiveness of a pump. Furthermore, there is also an advantage that orbital motion by which the movable scrolling 2 was stabilized is made, reducing the machine loss by friction, since the end plate end-face 9a part of the movable scrolling 2 was pressed with the coil spring 32 through the sliding material 31 toward thrust pad side 6b inside [6] the proposal of the fixed scrolling 3.

[0029] Drawing 9 is the operation gestalt of further others of this invention, and shows the case where an engagement means 20 to make the driving shaft 10 of the movable scrolling 2 engage with an eccentric cam 13 so that it may become movable [the movable scrolling 2] at the time of revolution of the movable scrolling 2 only radial direction A [the drive transfer device 8 for changing into the orbital motion of the movable scrolling 2 centering on a shaft 12 the power of the motor 11 shown in drawing 2 and drawing 3] is established. Other configurations are the same as that of drawing 2 and the operation gestalt of drawing 3 , and only a different point is described. In this example, the engagement hole 17 with which the driving shaft 10 of the movable scrolling 2 engages with the eccentric cam 13 attached in a shaft 12 is formed. Along with the engagement hole 17 which this engagement hole 17 consists of a long hole prolonged for a long time in parallel with radial direction A of the movable scrolling 2 toward the periphery side from the core side of an eccentric cam 13, and consists of this long hole, the driving shaft 10 of the movable scrolling 2 is inserted possible [a slide]. And when an eccentric cam 13 rotates by the shaft 12 (drawing 2) and the movable scrolling 2 carries out orbital motion, it can hold in the condition that a driving shaft 10 moves to the outer edge side of the engagement hole 17 toward radial direction A according to the centrifugal force accompanying revolution of the movable scrolling 2, and end plate end-face 9a of the movable scrolling 2 does not contact in the side faces of wings 4 and 5 in slide contact with the interior 6 of a proposal of the fixed scrolling 3.

[0030] Since a deer will be carried out, end plate end-face 9a of the movable scrolling 2 will surely **** to the interior 6 of the proposal of the fixed scrolling 3 according to the centrifugal force at the time of revolution of the movable scrolling 2 and this slide contact will moreover become continuous, the collision sound of the movable scrolling 2 and the fixed scrolling 3 can be lost, and low noise-ization of the scrolling compressor 1 can be attained. And since what is necessary is just to form in a long hole the engagement hole 17 engaged in a driving shaft 10, there is also an advantage that structure becomes easy. In order to raise the precision of the clearance between a wing 4 and 5, incidentally it is necessary to raise the process tolerance of the movable scrolling 2 and the fixed scrolling 3, or to raise the assembly precision of fixed scrolling to a motor 11, and movable scrolling in the former. On the other hand, in this invention, since a wing 4 and the interior 6 of a proposal which manages the clearance between five are established in the fixed scrolling 3, a wing 4 and clearance precision between five cannot be easily raised only by raising the process tolerance of the movable scrolling 2 and the fixed scrolling 3, and assembly precision has the advantage of not being required.

[0031] Drawing 10 is the modification of drawing 9 and shows the case where it has the elastic body 21 for pressing the movable scrolling 2 to radial direction A, and holding end plate end-face 9a of the movable scrolling 2, and the interior 6 of a proposal of the fixed scrolling 3 in the state of a slide contact at the time of revolution of the movable scrolling 2. Other configurations are the same as that of the operation gestalt of drawing 9 , and only a different point is described. In this example, the elastic body 21 which consists of a coil spring for carrying out the elastic press of the driving shaft 10 of the movable scrolling 2 toward the periphery side of the engagement hole 17 is formed in the engagement hole 17 of an eccentric cam 13. Carry out a deer, and end plate end-face 9a of the movable scrolling 2 is pressed in the direction which always ****s to the interior 6 of a proposal of the fixed scrolling 3 according to the spring force of an elastic body 21, and it surely comes to **** to end plate end-face 9a and the interior 6 of a proposal. Since the slide contact to the movable scrolling 2 and the fixed scrolling 3 can reduce the collision sound of the fixed scrolling 3 and

the movable scrolling 2 in a continuous thing and should just attach an elastic body 21 in the engagement hole 17 further by this Low noise-ization can be attained with easier structure.

[0032]

[Effect of the Invention] If it is in invention according to claim 1 as mentioned above Since the interior of a proposal for guiding the end plate end face of movable scrolling was established in fixed scrolling so that a movable vane and a stationary vane might not contact mutually at the time of revolution of movable scrolling It can prevent that the side faces of the wing of movable scrolling and fixed scrolling contact at the time of revolution of movable scrolling by the slide contact to an end plate end face and the interior of a proposal, noise abatement by contact of the side faces of a wing can be planned, and the noise of a pump can be reduced. And since the interior of a proposal is established in fixed scrolling, as a result of being able to manufacture now the stationary vane and the interior of a proposal of fixed scrolling collectively, becoming easy to take out the precision of the clearance between wings, being able to make the clearance between wings small by this and being able to raise the effectiveness of a pump, an efficient scrolling compressor can be offered in the low noise.

[0033] Moreover, while invention according to claim 2 makes circular the periphery configuration of the end plate end face of the above-mentioned movable scrolling in addition to effectiveness according to claim 1 Since the value which applied the end plate radius of movable scrolling and the revolution radius of movable scrolling for the configuration inside the proposal of fixed scrolling was made into the round shape made into a radius It can be made to **** continuously and certainly to the interior of a proposal of fixed scrolling of the end plate end face of movable scrolling at the time of revolution of movable scrolling now, and the collision sound of movable scrolling and fixed scrolling can be reduced further.

[0034] Invention according to claim 3 in effectiveness according to claim 1 moreover, in addition, the slide contact side the end plate end face of the above-mentioned movable scrolling, and inside [of fixed scrolling] a proposal Since abbreviation etc. was by carrying out to the field which intersects perpendicularly with the plate surface of movable scrolling and fixed scrolling, respectively and it was made to incline at an include angle In case an end plate end face ****s to the interior of a proposal by migration of the radial direction accompanying revolution of movable scrolling The pressure when an end plate end face ****ing to the interior of a proposal is distributed by the force of a radial direction, and the force of the thrust direction, and as a result of being able to reduce wear of the slide contact side of the end plate end face and the interior of a proposal which this moves to a radial direction, reinforcement of movable scrolling and fixed scrolling can be attained.

[0035] Invention according to claim 4 in effectiveness according to claim 1 Moreover, in addition, the ingredient which forms a part for the end plate edge surface part of the above-mentioned movable scrolling, from the ingredient with which the ingredients which form the body parts of an end plate and movable vanes other than an end plate edge surface part part differ -- becoming -- *****, since movable scrolling is formed by unifying a part for an end plate edge surface part, the body part of an end plate, and a movable vane with an ingredient For example, as an ingredient of the interior of a proposal, and the slide contact side for an end plate edge surface part, if abrasion resistance and a low friction material are used, reduction can be aimed at for the abrasion loss of a slide contact side, for example, if a resin ingredient is used, the adhesion of a slide contact side can be raised.

[0036] Invention according to claim 5 in effectiveness according to claim 1 moreover, at least

to in addition, one side of the end plate end face of the above-mentioned movable scrolling, the interior of a proposal of fixed scrolling, and a slide contact side Since insert molding of the slide member which consists of a different ingredient from the ingredient which forms movable scrolling and fixed scrolling was carried out By carrying out insert molding of the slide member which consists of abrasion resistance and a low friction material, abrasion loss can be reduced to a part for the end plate edge surface part of movable scrolling, and a life can raise it.

[0037] Invention according to claim 6 in effectiveness according to claim 1 moreover, in addition, the interior of a proposal established in the above-mentioned fixed scrolling Since it consists of a radial receptacle side which receives the force of the radial direction accompanying revolution of movable scrolling, and a thrust pad side which receives the force of the thrust direction of movable scrolling Each location regulation of the radial direction in movable scrolling and the thrust direction comes to be prepared in one in the same components (fixed scrolling), and it becomes easy to carry out management of the clearance between wings, as a result leads to the improvement in effectiveness of a pump. Furthermore, the orbital motion by which movable scrolling was stabilized more becomes possible by considering as the structure which presses a part for the end plate edge surface part of movable scrolling toward the thrust pad side inside the proposal of fixed scrolling.

[0038] Invention according to claim 7 in effectiveness according to claim 1 moreover, in addition, the drive transfer device for changing the power of the above-mentioned motor into the orbital motion of movable scrolling centering on a shaft Since it has an engagement means to make the driving shaft of movable scrolling engage with an eccentric cam so that movable scrolling may become movable only to a radial direction at the time of revolution of movable scrolling Since movable scrolling is engaging with the radial direction movable to a shaft, The end plate end face of movable scrolling and the interior of a proposal of fixed scrolling can be made to be able to **** certainly, the collision sound of movable scrolling and fixed scrolling can be lost, and it becomes much more effective for noise abatement. Moreover, in the case of the structure of attaching a driving shaft in an eccentric cam by press fit like before Since the successive range of the radial direction accompanying revolution of movable scrolling will be fixed by the eccentric cam In order to make the end plate end face of movable scrolling **** certainly to the interior of a proposal of fixed scrolling Although the process tolerance of movable scrolling and fixed scrolling is raised and it is needed, since the driving shaft of movable scrolling is made to engage with an eccentric cam so that it may become movable to a radial direction about movable scrolling in this invention It becomes possible to make the end plate end face of movable scrolling **** certainly to the interior of a proposal of fixed scrolling, and it is effective in not raising process tolerance of movable scrolling and fixed scrolling.

[0039] Invention according to claim 8 in effectiveness according to claim 7 moreover, in addition, the above-mentioned engagement means Since movable scrolling is made to engage with a shaft so that the end plate end face of movable scrolling may **** to the interior of the proposal of fixed scrolling according to the centrifugal force at the time of revolution of movable scrolling According to the centrifugal force at the time of revolution of movable scrolling, the end plate end face of movable scrolling and the interior of a proposal of fixed scrolling will **** continuously, the collision sound of movable scrolling and fixed scrolling can be lost, and low noise-ization of a scrolling compressor can be attained.

[0040] Invention according to claim 9 in effectiveness according to claim 7 moreover, in addition, the above-mentioned engagement means Since it has the elastic body for pressing

movable scrolling to a radial direction and holding the end plate end face of movable scrolling, and the interior of a proposal of fixed scrolling in the state of a slide contact at the time of revolution of movable scrolling The end plate end face of movable scrolling and the interior of a proposal of fixed scrolling can be made to **** certainly according to the spring force of an elastic body at the time of the orbital motion of movable scrolling, it is the easy structure of preparing an elastic body, and a collision sound can be reduced further.

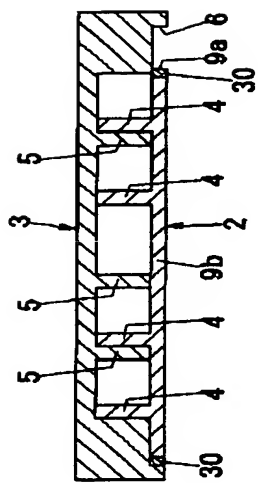
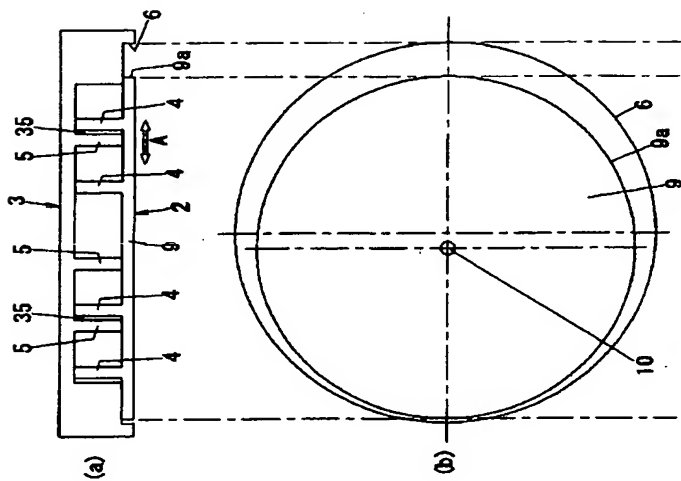


Fig 7



- 2 可動スクロール
3 固定スクロール
4 可動部材
5 固定部材
6 案内部
9 軸芯
9a 軸芯端面
35 溝
A ラジアル方向

Fig 1

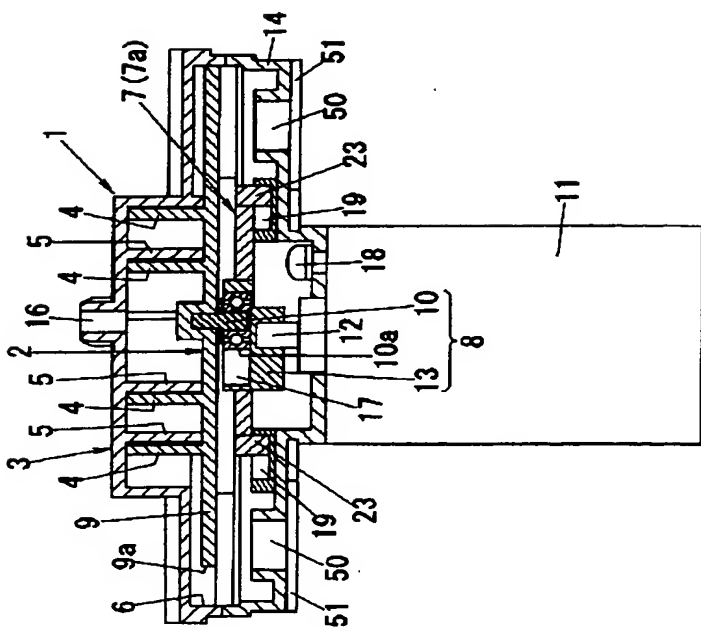


Fig 2

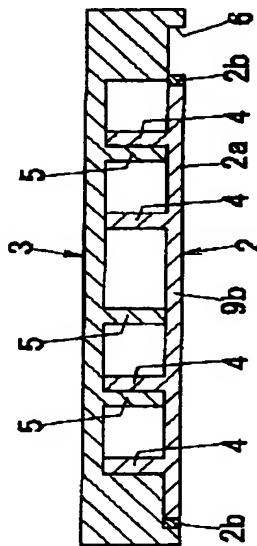


Fig 6

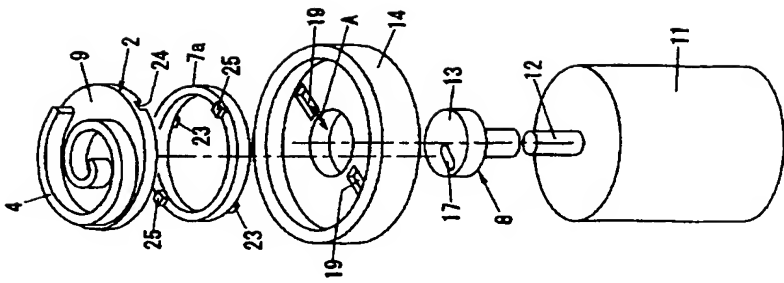


Fig 3

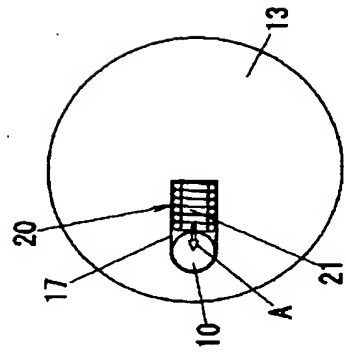
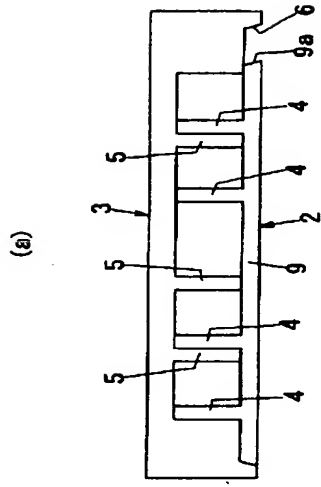
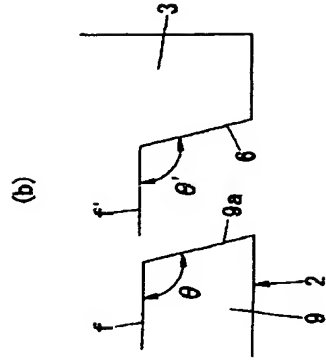


Fig 10



(a)



(b)

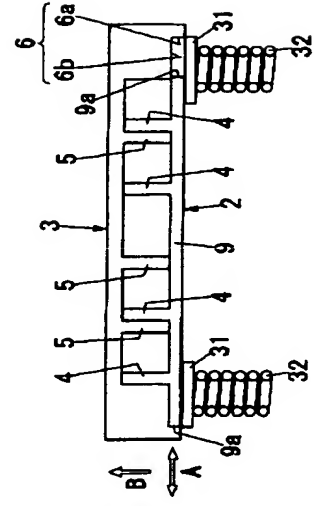


Fig 8

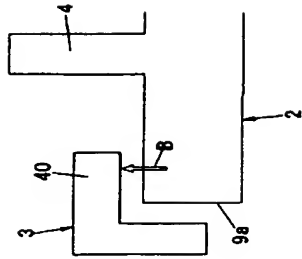
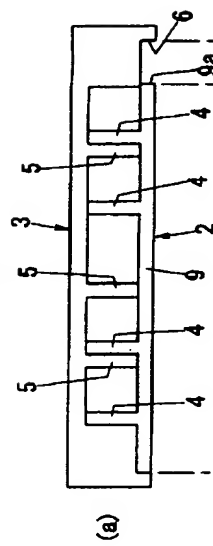
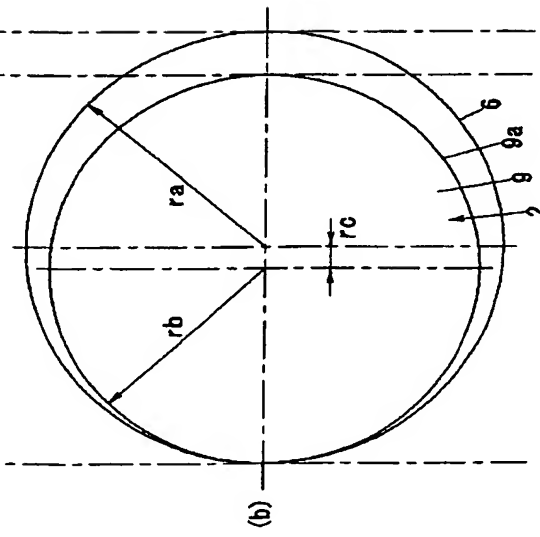


Fig 12

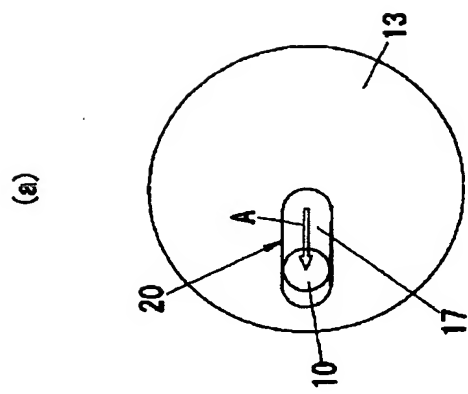


(a)

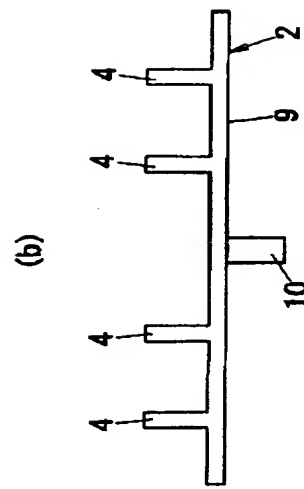


(b)

Fig 4



(a)



(b)

Fig 9

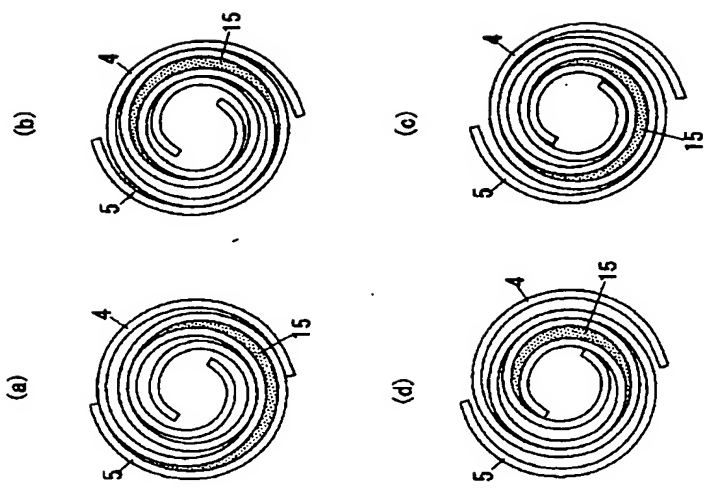


Fig 11